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Discusses the relation of the individual to the state. Voluntary groups of men constitute an effective counterbalance to the restraint of state.

QUACK, H. P. G. *De socialisten*. (Amsterdam: P. N. van Kampen & Zoon. 1911. Pp. viii, 461. 12.50 fl.)

RIVAIN, J. *Les socialistes anti-démocrates. L'avenir du syndicalisme. La patrie des prolétaires. A propos des retraites ouvrières*. (Paris: Nouvelle Librairie Nationale. 1911. Pp. 72. 0.75 fr.)

ROSENBAUM, E. *Ferdinand Lassalle. Studien über historischen und systematischen Zusammenhang seiner Lehre*. (Jena: Fischer. 1911. Pp. viii, 218. 5.50 m.)

To be reviewed.

RUSSELL, H. A. *Constructive socialism*. (New York: Scribner, imported. 1911. Pp. ix, 228. \$1.25.)

STAUDINGER, F. *Kurze Übersicht über das genossenschaftliche Bildungswesen*. (Hamburg: Verlagsanstalt des Zentralverbandes deutscher Konsumvereine. 1911.)

VERECQUE, C. *Dictionnaire du socialisme*. (Paris: Giard & Brière. 1911. Pp. 502. 5 fr.)

WHITEHEAD, G. *Socialism and eugenics*. (London: Twentieth Century Press. 1911. Pp. 15. 1d.)

WINKELBLECH, K. G. (KARL MARLO). *Aus Karl Georg Winkelblech's (Karl Marlo's) literarischem Nachlass*. Arranged by W. E. BIERMANN. (Leipzig: A. Deichert. 1911. Pp. v, 163. 3 m.)

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*The coöperators' year book for 1912*. (London: Co-partnership Publishers. 1912. 4d.)

## Statistics

*An Introduction to the Theory of Statistics*. By G. UDNY YULE. (London: Charles Griffin and Company; Philadelphia: J. B. Lippincott Co. 1911. Pp. xiii, 375.)

Mr. Yule has furnished what is easily the best introduction available to the methods of the Galton-Pearson school of statistics. The product, in part, of a seven years' tenure of the Newmarch Lectureship in Statistics at University College, London, the book shows in every page that painstaking care has gone into its preparation. Though Mr. Yule has denied himself the employment of any but elementary mathematics his book is distinctly one for the serious student and, one may fairly say, for the mathematically minded. The treatment is as rigorous as it well could be under the limitations set, and throughout the book there is an effort to make clear the principles involved and to avoid everything that approaches a mere rule of thumb. At some points one feels, in-

deed, that Mr. Yule's elucidation of principles becomes merely exposition for exposition's sake. Why, for example, should the student be required to master the awkward proof of the validity of the coefficients of regression and the coefficient of correlation given on pages 169-173 when a simpler, neater, and more general proof is given elsewhere (pp. 227-229)?

In the three general divisions of the book Mr. Yule deals in order with "the theory of attributes," "the theory of variables," and "the theory of sampling." The theory of attributes has to do with the methods of drawing inferences from the frequency with which certain attributes, not necessarily quantitatively measurable in themselves (such as insanity, illiteracy, nationality), are found to be present or absent in given groups. Here Mr. Yule speaks with especial authority, for in several memoirs, building on the foundation given by the symbolic logic of Boole and Jevons, he has done much to develop useful general rules for the statistical treatment of attributes and has introduced a simple and convenient symbolism. The systematic treatment of this subject contained in his book is an innovation to be highly commended, for it is in this field that seemingly simple statistical facts are most often mishandled and wrong or dubious inferences drawn.

The general treatment of frequency distributions, of averages, and of measures of dispersion comes under the head of the theory of variables, while the theory of sampling covers the older field of the application of the theory of errors to statistics, together with many modern developments. The treatment throughout is generally admirable, although it is colored by the author's fundamental interest in the theory of correlation, which occupies over one half of the second part of the book and one chapter in the third part, while the related topic of the association of attributes is given an important place in the first part. In short, the whole discussion centers around and leads to the subject of correlation. This suggests certain limitations in Mr. Yule's conception of the "theory of statistics." In economic and social statistics, at least, facts may have a significance apart from their statistically determinable correlations, and this should not be forgotten in passing judgment upon alternative methods of presenting and interpreting statistics or upon competing statistical constants. Mr. Yule's preference for the arithmetic average (a preference shared by the reviewer) is based largely upon its amenability to further

algebraic treatment. Similar advantages are properly claimed for the standard deviation as a measure of dispersion or of the precision of an average or other statistical constant. Mr. Yule has especially in mind here the treatment of correlation. But, as Professor Edgeworth has suggested, the probable error has the advantage (which the standard deviation lacks) of corresponding to "a definite notch on the scale of credibility," and the mode and median likewise have an advantage as to psychological definiteness. Such considerations lie fairly outside Mr. Yule's scheme of statistical theory.

The book is possibly deficient pedagogically in that it deals *ab initio* with general principles and only secondarily with concrete problems. That is, concrete problems are not employed in such a way as to indicate at once the significance of the general treatment or to stimulate interest in it. It will scarcely serve as a textbook, but should be invaluable to the serious student who wishes to gain a working knowledge of modern statistical methods. Economic statistics are not neglected, and figure among the well selected problems given with each chapter. The bibliographies are admirably discriminating and furnish the advanced student an adequate guide to the original memoirs in which the methods discussed have been developed. One rarely finds a book in which the arithmetical work and proof-reading have been done so accurately.

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#### NEW BOOKS

CALMES, A. *Die Statistik im Fabrik- und Warenhandelsbetrieb*. (Leipzig: G. A. Gloeckner. 1911. Pp. viii, 189. 4.20 m.)

A study of statistics from the point of view of the industrial and commercial entrepreneur, exposing the carelessness both of theory and practice. The first part is devoted to the organization and technique of statistics; the second to statistics of balance sheets, expense accounts, employes, salaries, etc., taken from the actual business experience of the house of Siemens und Halske, Berlin.

CHEYSSON, E. *Oeuvres choisies*. (Paris: Rousseau. 1911. Pp. 412. 10 fr.)

The fruits of forty years' study are comprised in this publication which the author calls his "testament social."

MACIEJEWSKI, C. *Les nouveaux fondements de la théorie de la statistique*. (Paris: Giard & Brière. 1911. Pp. 127. 3 fr.)